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ABSTRACT

This paper reviews the research on second language acquisition and bilingualism conducted in Canada over the past decade (1970-79). The material on second language acquisition is presented under the following headings: approaches to second language instruction, individual differences and second language acquisition, and effects of second language acquisition on individual characteristics. The literature on bilingualism is discussed under these headings: perceptual processes, the representation of experience, consequences of bilingualism, and bilingualism in interpersonal communication. The bulk of the paper consists of a narrative report; an 11-page bibliography, alphabetical by author, is appended. (Author/JB)

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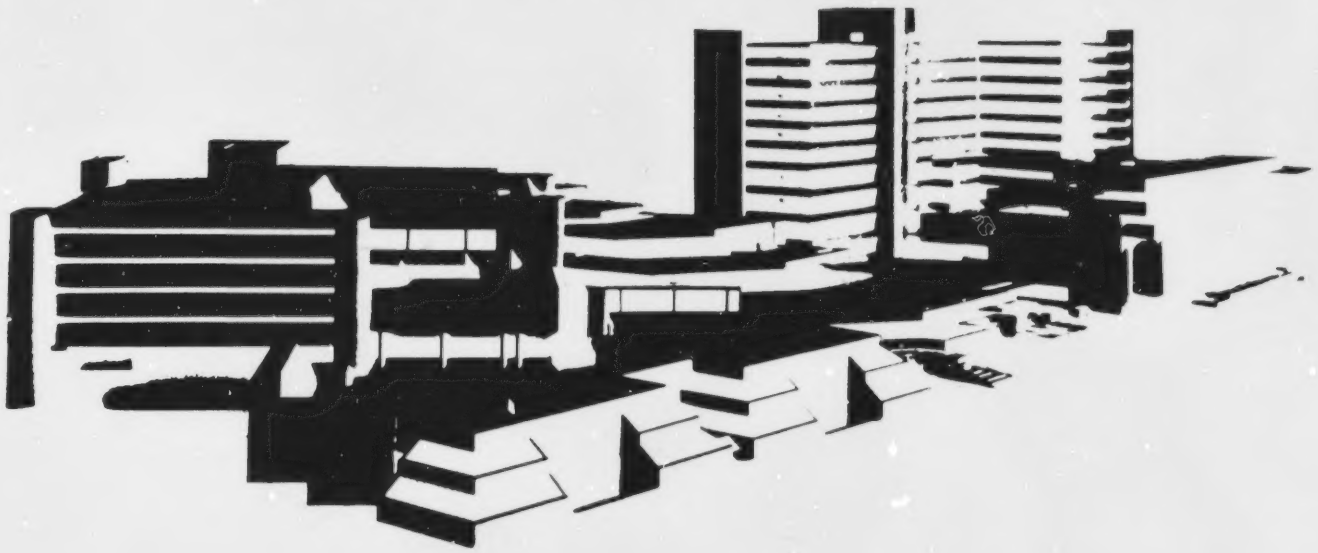

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SECOND-LANGUAGE ACQUISITION AND BILINGUALISM: RESEARCH IN CANADA (1970-1979)[1]

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Abstract

This paper reviews the research on second language acquisition and bilingualism conducted in Canada over the past decade (1970-79). The material on second language acquisition is presented under the headings: approaches to second language instruction, individual differences and second language acquisition, and effects of second language acquisition on individual characteristics. The literature on bilingualism is discussed under the headings: perceptual processes, the representation of experience, consequences of bilingualism, and bilingualism in interpersonal communication.

Second-language Acquisition and Bilingualism: Research in Canada (1970-1979)

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Second-language learning and bilingualism are active research areas in Canadian psychology and textbook chapters are now devoted to these topics (see Gardner & Kalin, in press; Paivio & Begg, in press; Reynolds & Flagg, 1977; Taylor, 1976). In Canada, research on second-language learning and bilingualism typically involves the two official languages, French and English, largely because they are so important in both historical and current terms. This situation, however, may change since more work is now being done to develop bilingual programs for Canadian Native people. At the moment, these efforts are mainly directed toward the development of orthographic systems, pedagogical materials, and curriculum (c.f., Burnaby & Anthony, 1979; Barkow, 1974; Downing, 1978; Ellis, 1971; Todd, 1971), though it seems reasonable that interest in other aspects will soon develop. In addition, other language communities are expanding within the context of Canadian multiculturalism, and it is understandable that research involving these other communities will soon be initiated.

SECOND LANGUAGE ACQUISITION

Considerable research has been conducted in the Canadian context on factors involved in learning a second language. Although the bulk of this research has been concerned with the effects of individual differences on second language acquisition, and the effects of language acquisition on individual difference variables, some research has focused also on instructional techniques. Before

considering the individual difference literature, attention will be directed first to those studies dealing with instructional procedures.

Approaches to second language instruction

Three approaches to second language instructional techniques can be classified as micro-approaches in that they are content- or skill-specific. The first two micro-approaches are imagery mnemonics designed for vocabulary learning. These mnemonics date back to the 17th century (see Paivio, 1971, Chap. 6) but they continue to be advocated today by professional mnemonists. The first such mnemonic technique is referred to as the keyword technique. Its procedure involves two stages. The first stage requires the student to associate the new unfamiliar word to a word in the student's native language that sounds like the new word. For example, an English-speaking student trying to learn the French word marteau (hammer) might think of the English word toe which sounds like the last syllable of the target word. Toe now becomes the keyword for marteau. The second stage requires the student to form a mental image of the objects denoted by the keyword and the word to-be-learned. For the target word marteau, the student might imagine a hammer hitting someone's toe. Thus the target item is linked to a keyword by a similarity in sound (acoustic link) and the keyword is associated to the native language translation by a mental image (imagery link). This technique was first tested in the United States (see for examples, Atkinson, 1975; Pressley & Levin, 1978) and was shown to facilitate the acquisition of meaning (i.e., comprehension skills), but not recall (or production) of second-language items (Pressley, Levin, Hall, & Miller, 1980). Only one study using this technique appears to have been conducted in the Canadian context to the present time, and that obtained slightly different results. Singer (1977) used the technique with high school students and reported results suggesting that it may facilitate both comprehension and productive recall of French vocabulary.

An alternative imagery mnemonic technique has been developed in the Canadian context. Referred to as the Hook technique, its use for learning long lists of second-language vocabulary items has been described by Paivio (1978). In many ways it is very similar to the classic nursery-rhyme mnemonic "one is a bun, two is a shoe" in that it involves numbers that are associated to peg words. This association is accomplished by a consonant-number code which can be used to generate a list of up to 100 peg words. Each of these peg words can then be linked to a target item by a mental image. Thus the second stage of the Hook technique is identical to the second stage of the keyword technique (i.e., the imagery link). Another characteristic of this technique is that the peg words are in the same language as the words to-be-learned. An initial experiment reported by Paivio and Desrochers (1979) showed that English-speaking students with some educational background in French could recall three times as many new French words when they used the hook mnemonic, relative to a rote rehearsal control condition. Recently, Desrochers (1980) extended the experimental use of this technique to more complex verbal materials, namely, French article-noun pairs. Results clearly show that the hook mnemonic facilitates the productive recall of both French nouns and their grammatical gender. No information, however, is yet available on the usefulness of this technique outside the laboratory.

The third micro-approach to second-language learning is concerned with the acquisition of prosodic and articulatory features. Neufeld (1977, 1978) and Neufeld & Schneiderman (1980) have pointed out that language students are frequently expected to produce new sounds and new intonations before they have learned to perceive and discriminate them. This sequence of events, he argues, is counter-productive and it interferes with effective acquisition of the target phonological system. He designed an 18 video-taped lessons package which focused exclusively on phonetic material. The first 12 lessons are composed of contour-tracing and

auditory discrimination exercises during which the student listens to, but does not produce, any sound. The last six lessons involve a combination of discrimination and production exercises. After 18 hours, approximately 50% of the participants in this experimental project were evaluated by naive judges as native or near-native speakers. If this finding turns out to be robust, the main implication of this research is that oral production in language courses would benefit from concurrent sound discrimination exercises or simply from a delay until the pertinent perceptual skills have been acquired.

Three other techniques of second-language instruction are best described as macro-approaches in that they refer more to general classroom-based pedagogical procedures. They differ from traditional classroom-oriented language-teaching methods, however, in that they emphasize the importance of contextual information and interpersonal communication in language learning. The target language is taught as a means of communication rather than a school subject, an approach which is now, in fact, common to a number of instructional techniques. Three such techniques have been investigated in Canada.

The first, called suggestopaedia, was developed by Georgi Lozanov, a Bulgarian medical doctor, whose work has recently been translated into English (1978). Suggestopaedia has been used in the Canadian Public Service since 1973 with apparent positive results (see Racle, 1975, 1979). The basic premises underlying this approach are that language should be introduced as a means for interpersonal communication and that focusing attention on the communication process helps students overcome the initial state of fear and apprehension so typical of beginners. In this approach, the learning environment must be informal and relaxed, with comfortable chairs and soft music. Students meet regularly in groups of about twelve for about half a day. The first course of the program comprises 25 sessions with attention centered on dialogues from the start. Each dialogue is

built around a particular topic, and introduces several linguistic points and about 150 new lexical items. The newly acquired items and grammatical rules can be used immediately in the context of ongoing interpersonal communication. Preliminary evaluations suggest that this method is more effective than a comparable audio-visual-structural approach (Racle, 1975).

A second, conceptually similar technique was initially proposed by Curran (1961) and referred to as "Community Learning". This technique involves a non-structured discussion situation similar to a group therapy session where each student (client) has his/her own resource person to help him/her formulate statements in the second language. The instructor guides the discussion and offers explanations and elaboration, but the major focus is on communication first, and language instruction second. Bĕgin (1971) conducted an in depth investigation of such a course among nine students, and demonstrated that students developed considerable competence in French as a second language. Comments made by the students indicated that in particular they felt they had made appreciable gains in French.

The third macro-approach also emphasizes communication more than language instruction, though depending upon the context, varying amounts of direct language instruction are involved. One version is based on the premise that "the student can most effectively acquire fluency in a second language when the task of language learning becomes incidental to that of gaining knowledge about a specific topic (e.g., geography, math or basketball) via the target language through communication with a native speaker (d'Anglejan, 1978, p. 227)".The type of tasks that would be used need not be the same for adults and for children, but the principle is the same. Such a program was recently implemented in Montreal for adult immigrants who seemed to make no progress in government-sponsored intensive 30-week courses in French as a second language (d'Anglejan, Arsenault, Lortie, &

Renaud, 1978). Since formal instruction did not appear to be beneficial, these adult students were placed in carefully chosen occupational slots in French-speaking environments (e.g., a Greek draftsman in an architect's office). The students also met regularly with a language teacher and a member of the evaluation team to discuss their experiences and, if necessary, get some help with language or social adaptation problems. A preliminary evaluation of this project suggests that the general approach is promising.

The best known applications of such an approach with children are the various immersion programs in which students receive much of their school instruction in the second language. The term, immersion program, in fact refers to at least three different types of programs. There is the early immersion program which typically starts in kindergarten or grade 1 (see for example Lambert and Tucker, 1972) and which in the initial years involves exclusive use of the second language for all subject areas. There is also the partial immersion program where some but not all subject areas are taught in the second language (see, for example, Swain, 1974). Finally, there is the late immersion program where instruction in subject areas is begun in the later grades. Such programs are typically begun in grade 7 or 8 (Tucker, 1974) though some have been introduced into the secondary school program. The research findings warrant the conclusion that both early and late immersion programs promote appreciable levels of achievement in the second language, and that whereas partial immersion programs are not as effective in developing proficiency in the other language (as might be expected), they are far superior to traditional French-as-a-second language program (also as might be expected) (see Swain, 1974).

Individual differences and second-language acquisition

Research concerned with individual difference correlates of second language acquisition have considered at least two different criteria. By far the most

frequently investigated are measures of proficiency in the second language. These vary from language course grades, to performance on objective tests of second language skills, to ratings of speech samples to self-ratings of acheivement. None of these, in and of themselves can be considered a true measure of second language proficiency; each taps a somewhat different (and valid) aspect of achievement. Although it receives less attention, there is another type of criterion which has been investigated and which also represents a meaningful aspect of second language acquisition. This is an interest in the other language and/or language community and is often referred to as a non-linguistic outcome of second language programs. Such interest can be manifest in many ways such as continuing or dropping out of further language study (referred to as perseverance), participating in opportunities to visit the other language community, or in the type of activity displayed in the language class.

The individual difference correlates of second language acquisition investigated most frequently appear to be age, sex, cognitive abilities, attitudes and motivation,and personality. In terms of research activity in Canada, the last two classes of variables, attitudes and motivation, and personality attributes appear to have received the greatest attention.

Age. There do not appear to have been many studies conducted in Canada over the past decade which have been concerned directly with the effects of age on second language acquisition. One study which was conducted (Ramsey and Wright, 1974) found evidence of a critical age in second language learning among immigrants to Canada. That is, after the age of 7, children tended to be less successful in the second language than younger ones. Cummins (1979a), however, reanalyzed the data and concluded that older learners are in fact more successful than younger ones. Despite the relative lack of research, there have been at least three review articles published. This particular variable is of some

interest because although conventional wisdom has it that children are better language learners than adults, the research evidence suggests just the opposite. This point is made in all three reviews, though in each case somewhat different implications are made about the research findings. Smythe, Stennett and Gardner (1975) review the relevant psychological studies, and the FLES (Foreign Language in the Elementary Schools) programs in the USA and Canada and conclude that even though older students learn more and faster than younger ones, there is an advantage in starting second language training at a young age because it provides more time for language learning to take place. They suggest too, that young children may not bring with them as many antagonistic attitudes (see below) as older students, and that as a result teachers may be more successful in motivating students to learn the language. Stern (1976) discusses research conducted in Great Britain and in Canada, and argues for the strong role played by environment. He suggests that instead of focusing on the question of what is the optimal age in learning a second language, we should search for those factors which promote second language acquisition at differing ages realizing that any particular age level has its peculiar strengths and weaknesses. He points out how immersion programs have become a particularly Canadian approach to this problem. Genesee (1978) interprets the research literature as suggesting that age is an important factor primarily because starting at an early age provides more time for the student to learn the language material but that older students are more efficient learners. He points out, however, that there are many new pedagogical techniques which might be developed which could enhance language learning by young children, or capitalize on the greater efficiency of older learners, and indicates the need for greater research in this direction.

Sex. Although many studies of individual differences in second language achievement include sex as a variable, little attention seems to have been

devoted to determining the actual role played. Most studies (in which it is even considered) demonstrate that females achieve higher levels of proficiency than males (see for example Gardner and Lambert, 1972; Smythe, Stennett and Feenstra, 1972) though at least one study (Naiman, Frolich, Stern and Todesco (1978) failed to find an association between sex and objective measures of proficiency. Naiman, Frolich and Stern (1975) did find, however, that teachers believed that girls tended to be superior to boys at learning a second language. Even if further research does confirm that girls are superior to boys, however, it would seem important to identify the reasons for such findings. The problem with demonstrating sex differences is that it does nothing to clarify the process.

Cognitive Variables. Research on cognitive individual difference variables has tended to focus on two classes of variables, intelligence and language aptitude. In the Canadian context, furthermore, most researchers have simply tended to make use of existing measures of cognitive attributes rather than construct their own, and have generally included them along with a number of other variables.

Measures of intelligence have been included in studies of French achievement by anglophone students. Gardner and Smythe (1975) factor analyzed measures of attitudes, French achievement and intelligence for separate samples of students in grade 7, 8, 9, and 10, and found that for all but the grade 8 sample, the measure of intelligence made its biggest contribution to factors defined primarily by objective measures of French achievement. Comparable results were obtained by Genesee (1976) who studied anglophone students in grades 4, 7, and 11, in both a regular French program and an immersion one. In that study, however, it was found that whereas reading and language test scores were related to intelligence, listening comprehension and communication

skills were not. Intelligence has also been shown to be related to second language acquisition among francophones learning English. Clément (1976) obtained high associations between intelligence and objective measures of English proficiency for students in grade 10 and 11 (see also Clément, Gardner and Smythe, 1977; in press).

Research on the relation of language aptitude to second language proficiency has most often made use of the Modern Language Aptitude Test (MLAT) developed by Carroll and Sapon (1959) in the U.S.A. This battery consists of five tests, and is presumed to measure four language learning abilities, Phonetic Coding, Grammatical Sensitivity, Memory ability, and Inductive Language Learning ability. Research conducted by Gardner and Lambert (1972), Gardner and Smythe (1974) and Smythe, Stennett and Feenstra (1972) have shown consistent and substantial relations between the MLAT and proficiency in French. The MLAT has also been used for many years to aid in streaming students in the Canadian Government program of second language instruction for public servants. Wesche (in press) presents considerable material relating to the validity of the MLAT in this context, and its usefulness in identifying specific weaknesses or strengths of individual students which can be matched to particular pedagogical techniques. Wells (in press) has adapted the MLAT for use with francophone students of English as a second language, so that this approach ultimately may be used with both anglophone and francophone students.

Two studies have been concerned with investigating the measures of language aptitude themselves. Gliksman, Gardner and Smythe (1979) studied the one-year test/retest reliability of the short form of the MLAT for students in grades 7 to 11. They found the reliability of the subtests acceptable (i.e., greater than .60) for students in grades 10 and 11, but generally too low for students at the lower grades. Since the test was originally designed for students from

grade 9 onwards (Carroll and Sapon, 1959) this merely confirms that using it for children younger than intended is unwise. At the younger ages, factors such as education and maturity can have an appreciable influence on aptitude test scores. Harper and Kieser (1977) investigated the usefulness of the EMLAT for students in grades 7 and 8. The EMLAT (Elementary Modern Language Aptitude Test) was developed by Carroll and Sapon (1967) and is intended for students in grades 3 to 6. It taps the same abilities as the MLAT. Harper and Kieser (1977) present correlation coefficients between grades in French and each of the four EMLAT subtest scores (as well as the total) separately for boys and girls in grades 7 and 8 in two different language programs, an audio-lingual one and a "conscious-active" one involving oral and written communication and formal grammar training. Of the 40 coefficients, all but 3 were significant, and these were all from the sample of students studying in the "conscious-active" program indicating the possibility that the nature of the program might influence the magnitude of the validity coefficients of aptitude measures.

Attitudes and Motivation. These variables have received considerable research attention in Canada, as well as the U.S.A. and Great Britain. The original investigations of the relation between attitudes and achievement in a second language took place in Great Britain (Jordan, 1941; Jones, 1950a; 1950b) where the focus was on attitudes toward the language. The multivariance approach in which measures of attitudes, motivation, orientation, language aptitude and language achievement were investigated simultaneously was, however, introduced in Canada. Gardner and Lambert (1959) factor analyzed relationships among these measures for a sample of grade 11 anglophone students in Montreal and obtained two factors which shared variance in common with the measure of second language achievement. One was identified as a verbal intelligence (or language aptitude) dimension; the other was characterized as a social motivational factor. The

configuration of loadings on this latter factor suggested that achievement in French was related to positive attitudes toward the French Canadian community, a desire to learn the language for integrative reasons, and a heightened level of motivation to learn French. The two factors were independent leading to the conclusion that proficiency in a second language could be achieved either through a high level of ability or through an appropriate social motivation, but that individuals with both ability and such a social motivation will be even more successful.

Research on this topic has been directed largely by a social psychological theory of second language acquisition formulated by W. E. Lambert (1963; 1967; 1974). He argued that from a social psychological perspective, it is meaningful to assume that "if the learner is appropriately oriented, he may find that by learning another social group's language he has made the crucial step in becoming an acculturated part of a second linguistic-cultural community" (Lambert, 1963, p. 114). This proposition has many far-reaching implications. It implies, for example, that the individual's general ethnocentric tendencies and attitudes toward the other community will influence his/her relative degree of success in learning the other language. Considerable emphasis is also placed on the individual's orientation toward learning the language, which could be viewed as either instrumental (where the language is learned for utilitarian reasons such as "to get a good job") or integrative (where language learning is motivated by a desire to move closer psychologically to the other community). Because of the social psychological implications, integratively oriented students would be expected to be more successful in learning the language than those instrumentally oriented. Lambert (1967) suggests, further, that in the process of developing proficiency in the other language, the individual may begin to identify with both communities, and as a result experience feelings of anomie (social dissatisfaction) to the

extent that the two communities are not compatible. The extent to which this would happen would depend upon the social consequences of becoming bilingual. In this regard, Lambert (1974) distinguished between two different types of bilingualism. Subtractive bilingualism has obvious negative consequences and results whenever the acquisition of the second language implies or results in some loss in one's native language. Many immigrants, for example, tend to lose their first language skills as they become proficient in the language of their host community. Over time (i.e., generations) the native language and ethnic identification can be lost altogether. Additive bilingualism, on the other hand, is an enriching experience, where the individual acquires the second language with no loss to his/her native language skills and ethnic identity. This type is often characteristic of members of a politically dominant group learning the language of a less dominant group. The important point of the distinction, however, is that the role played by motivational variables in second language acquisition will obviously be influenced by the social implications of developing bilingualism, and thus the contexts in which the language is acquired.

Considerable research was conducted in the 70's in Canada to determine the extent to which attitudinal-motivational variables were related to achievement in a second language in different contexts. Smythe, Stennett and Feenstra (1972) demonstrated relationships between attitudinal-motivational variables and French achievement in two different types of French programs for grade 8 students, a traditional grammar translation course, and an audio-lingual one. Tucker, Hamayan and Genesee (1976) studied grade 7 students of French as a second language who belonged to an Early immersion group (i.e., began using French as the medium of instruction in kindergarten), a Late immersion group (i.e., began immersion study in grade 7), and an English Control group (i.e., studied French for one period a day since kindergarten). They found that attitudes and motivation were

significant predictors of proficiency in French regardless of group membership, and in fact were generally better predictors than aptitude and intelligence (as well as personality factors). Attitudinal motivational measures were also found to be significant predictors of achievement in French by Naiman, Frölich, Stern and Todesco (1978). Among selected samples of 24 students in each of grades 8, 10, and 12, they obtained measures of personality characteristics, cognitive style, attitudes, motivation and French achievement. They also observed the students' behaviour in the French class, and interviewed them to assess a number of attitudes.

Gardner and Smythe (1975) developed and cross-validated an attitude-motivational test battery for students of French-as-a second-language in grades 7 to 11, and obtained relationships similar to these at all grade levels. Similar relationships were also obtained from samples of students at the same grade levels from seven different regions in Canada (Gardner, Smythe, Clément and Gliksman, 1976), though it was demonstrated that both attitudinal-motivational variables and language aptitude indices correlate more highly in samples drawn from monolingual regions than from bilingual areas (Gardner, 1979).

Randhawa and Korpan (1972) made use of a factor analytic paradigm to investigate the dimensions of attitudes toward Learning French as a second language. They identified four correlated factors, three of which were interpretable. These were a Utilitarian attitude, Aestheticism, and Tolerance. They found that scores from the Tolerance factor and a Motivational Intensity Scale (a measure adapted from Gardner and Lambert, 1959) were the best predictors of achievement in French.

The role of attitudes and motivation have also been investigated with francophones learning English as a second language. Clément, Gardner and Smythe (1977; in press) demonstrated relationships between attitudes and motivation and proficiency in English as a second language for grade 10 and 11 students in

Montreal, while Clément, Major, Gardner and Smythe (1977) obtained similar results for a sample of Ontario grade 9 students. Gagnon (1974, 1976) made use of different types of measures but nonetheless investigated the relationship of indices of aptitude and attitudes toward English to achievement in English in samples of students from Québec, Ontario and New Brunswick. Significant relations between aptitude and achievement were obtained for all samples; the correlation between attitudes and achievement was not significant for the sample from New Brunswick. The correlations between aptitude and achievement were higher than those between attitudes and achievement, though the reason for this is not clear.

Research has also been conducted on the relationship between attitudes and motivation and other variables involved in learning a second language. Behaviour in the language classroom such as volunteering answers in class have been shown to be related to attitudinal-motivational characteristics (Gliksman, 1975; Naiman, Fröhlich, Stern and Todesco, 1978). Behaviour in the language classroom (specifically the total number of different goal directed behaviours) has also been shown to predict objective indices of language achievement among adult students (Wesche, 1979). Perseverance in language study, as indicated by the tendency to re-enroll in the course the following year as opposed to dropping out is also related to attitudinal-motivational characteristics (Clément, Smythe and Gardner, 1978), more so than indices of language aptitude. This same relationship was also demonstrated for samples of students in grades 7 to 11 from seven regions across Canada when the index of perseverance was a stated intention to re-enroll in French the following year. This could be interpreted as suggesting that attitudinal-motivational characteristics influence the amount of interest a student really has in learning the other language. Viewed in this light, a study by Shapson and Kaufman (1978) offers a similar conclusion in a somewhat different

context. They found that students who enrolled in a Grade 10 Late Immersion French program had more favourable attitudes toward French speaking people and were more integratively oriented than students in the regular grade 10 French program.

Personality. Although one might anticipate considerable research on the relationship between personality variables and second language proficiency, very little has been published on this topic. After reviewing the relevant literature, Gardner (1977) hypothesized that the relative lack of literature could be due to a preponderance of negative findings, or at best weak relationships. Some research has been conducted recently in Canada, though the findings have not been so strong as to noticeably reject such an hypothesis.

The lack of any strong relationships might be anticipated on the basis of a study conducted by Naiman, Frölich and Stern (1975). They asked language teachers to characterize successful and unsuccessful second language students. Although a number of personality attributes were included in the descriptions, the level of agreement wasn't high and often the same attribute was used to characterize both successful and unsuccessful students (e.g., shy, introverted). If those who see many successful and unsuccessful students cannot agree on attributes which differentiate the two classes of students, it seems reasonable that there isn't any so called "good" second language learner type of personality.

This generalization also seems warranted on the basis of other studies which have obtained only weak relationships. In the Tucker, Hamayan and Genesee (1976) study discussed earlier, measures of personality were included in their study of achievement among students in early immersion, late immersion and an English control. The personality measures included the Embedded Figures test (of field dependence/independence), and the Junior-Senior Highschool Personality Questionnaire. Personality indices did not contribute significantly to the overall prediction of any of the four measures of French proficiency, though they did

interact with type of language program indicating that personality variables are important in some contexts. For late immersion students, achievement in listening comprehension and oral production was associated with being assertive, emotionally stable, adventuresome and conscientious. This general pattern of an interaction of personality variables with type of program was also obtained by Hamayan, Genesee and Tucker (1977). Although they did find that a personality dimension of shyness was associated with poor French reading skills for grade 7 students from Early Immersion, Late Immersion and Regular French as a Second Language program, other personality dimensions had differential effects for different programs. Minimal results influenced by type of program were also obtained by Swain and Burnaby (1976), who investigated students in kindergarten, grade 1 and grade 2 in both immersion and regular French programs. Only 19% of the correlations of personality with achievement were significant for the immersion students, and only 6% for students in the regular program, suggesting both that the relationships aren't pronounced and that they are generally higher for immersion programs. Two personality characteristics, furthermore, accounted for the bulk of the significant findings. High levels of achievement tended to be associated with "quickness in grasping new concepts" and "perfectionistic tendencies" which instead of reflecting personality attributes associated with second language acquisition could indicate intelligence and characteristics of good students in general. A similar lack of any clear association of personality variables with second language achievement was reported by Genesee and Hamayan (in press) in their study of grade 1 French immersion students. They obtained two personality dimensions reflecting anxiety and assertiveness respectively, but neither of these contributed significantly to the prediction of French achievement. The best predictor was a factor score reflecting non-verbal reasoning field independence and a desire for all schooling to be in French (i.e., a composite of

intelligence, personality and motivation).

In their investigation of students in grades 8, 10, and 12, Naiman, Frölich, Stern and Todesco (1978) found some evidence of a relationship between field independence, and tolerance of ambiguity and achievement in a second language. Other personality variables, however, did not relate consistently to achievement. In this regard, Naiman, Frölich, Stern and Todesco (1978, p. 67) state, "Even though there were a few test measures of cognitive style and personality factors, i.e., field independence and intolerance of ambiguity, that were related to successful second language learning, the results of the majority of the cognitive style and personality tests administered did not yield any systematic relationships to the criterion measures." Although the authors feel that such results may have been due to a lack of validity of the personality and cognitive style measures, the fact remains that their statement, quoted above, seems generally descriptive of all of the studies of personality correlates of second language achievement.

Although researchers (Rivers, 1964) and teachers (Naiman, Frölich and Stern, 1975) often consider anxiety to be an important variable involved in second language acquisition, the research literature suggests that its relation to achievement depends upon the type of anxiety measure used, and possibly the social situation. Early studies conducted in Canada (see for example, Gardner and Lambert, 1959) failed to demonstrate a relationship between anxiety and proficiency in French, though later studies suggest that measures of anxiety involving the second language are related to proficiency. A measure of French Classroom Anxiety showed relationships to achievement in samples of Ontario students in grades 7 to 11 (Gardner and Smythe, 1975), and was the third highest correlate (behind aptitude and motivation) for samples in the same grades drawn from seven regions in Canada (Gardner, Smythe, Clément and Gliksman, 1976). In

studies of francophones studying English as a second language, a factor identified as Self-Confidence with English but including measures of English Classroom Anxiety and English Use Anxiety has been obtained (Clément, Gardner and Smythe, 1977; in press; Clément, Major, Gardner and Smythe, 1977). This dimension was independent of an attitudinal-motivational factor identified as an Integrative Motive dimension in each study, though it did share variance in common with motivational indices. Clément, Gardner and Smythe (in press) suggest that these results indicate that, for francophones at least, there are two motivational aspects associated with second language learning. This latter study demonstrated furthermore that only anxiety measures associated with involvement in the English Language or interpersonal interaction contributed to this dimension. French classroom anxiety did not load on this factor.

The Effects of Second Language Acquisition on Individual Characteristics

The preceding material was concerned with the effects of individual difference variables on second language acquisition, but considerable research has also been directed to determining the effects on the individual of trying to learn a second language. These studies have in general looked at the effects of particular types of second language programs. In this regard, the bulk of the research has centered on immersion programs, intensive language programs, and bicultural excursion and exchange programs. The major dependent measures have involved proficiency in the second language, skill in the first language, and attitudinal and motivational characteristics.

Immersion programs. An immersion program is one in which much of the student's instruction takes place in a language other than the home or native language. Early immersion programs typically involve "the exclusive use of the target language as medium of instruction at the early grade levels (e.g. kindergarten, Grade One, Grade Two) with the introduction of the mother tongue in a

language arts class at Grade Two or Three." (Tucker, 1974, p. 105). Late immersion programs, on the other hand, generally are preceded by several years of traditional second language study, "followed by a year of total immersion (e.g. at Grade Seven or Eight) in the target language" (Tucker, 1974, p. 106). Both types of programs usually develop into more bilingual types of education experiences where some content subjects are taught in one language and others in the other.

The first in-depth investigation of early immersion programs was conducted by Lambert and Tucker (1972) in a suburb of Montreal. That study spanned a time period of six years, and permitted the investigation of many developmental changes in the same children from the time they began their immersion program in kindergarten to the grade 5 level. Undoubtedly partly because of the success of this program and partly because of changing social events in Canada, there has been a great increase in the number of immersion programs, and with this a concomitant increase in the number of studies of the effects of such programs. Research has focused on the effects of immersion programs in various regions of Canada (see Swain, 1974), on the effects of immersion programs on working class students (Bruck, Jakimik and Tucker, 1975; Tucker, Lambert and d'Anglejean, 1973), on the effects on children with language disabilities (Bruck, Rabinovitch and Oates, 1975), on the effects of schooling in three languages (Genesee, Lambert and Tucker, 1979), and on the effects of late immersion programs (i.e., starting in grade 7).

Investigations of the effects of immersion programs on first (native) language skills involve comparing students in immersion programs with those in regular programs on objective measures of such achievement as for example with the Metropolitan Achievement test which assesses English reading and language skills (Swain, 1974). Often these comparisons are adjusted to control for

differences in intelligence. Invariably, these comparisons tend not to be significant or if they are significant (i.e. in kindergarten and grade 1 (Lambert and Tucker, 1972) are eradicated in following years once instruction in English is introduced. Such results have led researchers to conclude that there is no long-term retardation of first language skills as a result of immersion programs. Although it seems reasonable to argue that such a conclusion is justified, it should be emphasized that from a purely statistical point of view that conclusion cannot be drawn. Failing to reject a null hypothesis (i.e., saying a difference between means for two groups isn't significant) is not equivalent to showing that the two groups are comparable. One can only conclude that there is no evidence to suggest that they differ--which is quite another matter.

This same difficulty is involved in generalizations with respect to the acquisition of subject matter such as history, mathematics, etc. which is taught by means of the second language. Genesee (1979a) for example, refers to tests of mathematics skills for students in grades 1 to 6 in immersion programs and indicates that these students did not differ from an English Control who received their mathematics instruction in English. For students in post-grade 7 immersion programs, comparisons have been made between them and English Controls and them and the Québec norms based on French-speaking students. These comparisons, adjusted for differences in I.Q., showed either no differences, or differences in favour of the immersion students. As indicated above, however, the lack of significant differences cannot be taken as evidence that immersion students are "comparable" to the controls. These, however, are the typical findings (see Genesee, 1979a; Lambert and Tucker, 1972; and Swain, 1974).

If the studies are equivocal with respect to first language skills and course content, there is no ambiguity with respect to the acquisition of second language skills. The studies are in agreement in demonstrating that students in

both early and late immersion programs perform significantly and appreciably better than controls in regular second language programs (see Genesee, 1979a; Lambert and Tucker, 1972; Swain, 1974). Moreover, these effects have been demonstrated for students from working class homes (Bruck, Jakimik and Tucker, 1975), as well as those with language disabilities (Bruck, Rabinovitch and Oates, 1975).

The findings are not so clear cut when attention is directed toward the effects of immersion programs on attitudinal characteristics. Lambert and Tucker (1972) found that grade 2 French immersion students had more favourable attitudes toward French speaking people than did their English Controls, but these differences were not maintained with these types of tests in later years. Other ways of eliciting attitudes did show effects, however. By grade 5, these students stated in answer to a direct question that they liked French Canadians more than when they began studying French, and that they would be "just as happy" if they had been born into a French Canadian family. These students differed significantly from English Controls on these items. Cziko, Lambert, and Gutter (1979) suggest that the inconsistency of these findings and other unpublished ones might be due to the emphasis on evaluative aspects of attitudes. As a consequence they compared four different groupings of grade 5 and 6 students, English Speaking Controls, Early Immersion students, Late Immersion students and French Speaking Controls, on their multidimensional scaling profiles of a number concepts involving linguistic and cultural identity (e.g. monolingual English Canadians, French people from France, etc.). One dimension which appeared to be common to the four groups was a language, or English-French dimension. Furthermore, further analyses indicated that the early immersion students tended to perceive themselves closer to a bilingual focus (i.e., more similar to <u>both</u> bilingual French Canadians, and bilingual English Canadians) than the other three groups. Such results were

interpreted to mean that in the process of developing bilingual competence, anglophone students experiencing lengthy immersion training tend to reduce the social distance between themselves and French Canadians, particularly bilingual ones. Obviously, more research of this type is required but it seems possible that such an approach might clarify the nature of affective changes, if any, which occur as a result of immersion training.

Intensive language programs. The term intensive language program is used to refer to short term language programs (i.e., five or six weeks' where the major focus is on second language study. One of the earliest studies of this type was conducted by Lambert, Gardner, Barik and Tunstall (1962). In this study, adults participating in a six week French Summer school were tested at both the beginning and end of the program. They were classified as Elementary or Advanced language students on the basis of the level of the courses in which they were registered which in turn was decided on the basis of each student's past history and an intake interview. The results demonstrated that both elementary and advanced students increase significantly in anomie (feelings of normlessness, social dissatisfaction, or group alienation) from the beginning to the end of the course, but that only the elementary group increased significantly in authoritarianism. For the elementary group, furthermore, favourable attitudes toward French people, and an integrative orientation toward language study were positively related to measures of French achievement taken at the end of the program; for the advanced group favourable attitudes toward French people were negatively related to achievement. For this last group, however, increases in favourable attitudes toward French people from the beginning to the end of the program were associated with high levels of French achievement at the end of the program. Such results indicated that complex attitude changes take place as a result of intensive language study and that the relation between attitudes and achievement

is influenced by the dynamics of such a program.

A study by Tucker and Lambert (1970) demonstrated that attitudinal changes are influenced to some extent by the nature of intensive programs and possibly by how they are measured. They compared three groups of adult language learners who were in fact themselves French teachers. One group took part in a Foreign Language Leadership training program in France, another participated in an intensive language program in France, and the third was involved in an intensive French language program in the U.S.A. Attitudes were assessed before and after the program, making use of semantic differential scales and traditional attitude measures. On the semantic differential scales, all three groups rated the concept, French People, more positively after the courses than before. At the same time, however, they also demonstrated significantly less positive attitudes after the program on a Francophilia scale. Such results indicate a fine distinction between individual French people, on the one hand, and the French group on the other. Differential results were obtained for the three groups on a measure of anomie (i.e., alienation with one's role in society). Those students who were in the leadership training program decreased in anomie from the beginning to the end of the course, those who went to France only for language training became more anomic, while those who remained in the U.S.A. did not change. Clearly, the effects of second language programs are mediated by a number of factors.

A study by Gardner, Smythe and Brunet (1977) demonstrated similar complex attitude changes among a sample of high school students participating in a five week summer intensive program. They reported pronounced changes in both objective and self-report indices of French achievement, but two contrasting changes in attitudinal-motivational characteristics. Over the course of the program, the students demonstrated decreases in anxiety associated with using

French, and increases in the motivation and desire to learn French which were indicative of very positive gains as a result of the experience. At the same time, however, they also developed increases in ethnocentrism and a somewhat less positive attitude toward the French-Canadian community. Very similar results were obtained by Gardner, Smythe and Clément (in press) in an investigation of samples of American and Canadian adults involved in an extensive summer school program.

These studies lack the appropriate control conditions, hence many alternative interpretations are possible. Furthermore, in another context (i.e., bilingual exchange programs) it has been argued that such measuring instruments are inappropriate for this type of investigation (see Hanna and Smith, 1979); nonetheless the conclusions seem warranted, and other studies offer reasons for expecting the results obtained. Clément (1979), for example, studied attitudinal changes in two different groups of students, one participating in an intensive summer language program involving formal language training, and the other involved in a bilingual exchange program where students simply visited families in the other community. He found a pronounced decrease in anxiety in using French for students involved in the intensive program, but an increased favourability in attitudes toward French speaking people for those students in the exchange program. He suggests that this pattern of changes simply reflects the demands placed on the students in the two programs and the experiences they had. This point is made too, but in a different way in a study conducted by Bégin (1971).

Bégin's major purpose was to evaluate the language teaching technique of "Community Learning" first proposed by Curran (1961), and modelled after group therapy sessions. Bégin (1971) studied nine students who took part in a six week program and compared their performance with nine similar students who were studying French in a more traditional program at the same time and in the same

city (Québec). Both the Experimental and Comparison groups demonstrated significant improvement in their level of French skill in all aspects tested, and the groups did not differ significantly in terms of the amount of change. In terms of attitudinal/motivational measures, only the Experimental group demonstrated a significant change, and this on only one of three variables assessed, a measure of motivation (derived from TAT stories). The study did, however, highlight the many pressures operating on students in intensive language programs. Throughout the program, Bégin taperecorded the sessions as well as daily evaluations, and much of the report summarizes activities from various days. It is clear from the material presented that all students became more comfortable with using French and thus less anxious; attitudinal changes however were much more subtle and more variable. Admittedly, this course was very different from traditional programs and some pressures may have resulted from the nature of the course itself, but many of the comments reflect the influence of being placed in a context where one must rely on the second language.

Chlebek and Coltrinari (1977) provide a summary evaluation of two summer language programs for high school students from Ontario but held in Europe, and show that more than knowledge in the second language is acquired. Apparently, these investigators did not make use of any formal questionnaire about students' experiences but instead elicited comments from participants. Their analysis of these comments indicated that the students felt that they had developed considerable skill, ease and self confidence in French, and a more favourable attitude toward learning the language, and toward other countries and people. They felt too that they had developed more independence, greater maturity and a broader appreciation for their own way of life. These results suggest that for the students themselves, a number of changes are perceived to occur. Interestingly, many of the changes, with the exception of attitudes toward the other language

community, are similar to those obtained through objective assessments. As indicated in the next section, there is some debate as to which is the most appropriate way of assessing the attitudinal changes which take place from such experiences.

Excursion Programs. This class of program actually de-emphasizes language training, and instead is concerned primarily with the development of positive attitudes toward the other language community, cultural awareness, and an increased desire to learn and use the other language. Often their duration is relatively short, varying from two or three days to two weeks. The prime purpose, however, is to provide contact with members of the other community. Although there has been considerable research on inter-ethnic contact conducted in both the U.S.A. and Canada (Desrochers & Clément, 1979) the intent here is not to review that literature but instead to consider such contact in the context of second language learning.

Gardner, Kirby, Smythe, Dumas, Zellman and Bramwell (1974) studied a sample of grade 8 students who took part in a four day excursion to Quebec city. These students demonstrated a significant increase in positive attitudes toward French Canadians and in learning the language for integrative reasons. This study, however, involved a simple test/retest of the same students, thus the effects of repeated testing and demand characteristics cannot be ruled out.

A similar criticism cannot be made of a bilingual exchange study conducted by Hanna and Smith (1979). They investigated both linguistic and attitudinal outcomes among both anglophone and francophone students. Test/retest procedures were used in the assessment of language skills through means of a standardized oral interview, a measure of listening comprehension and a sentence completion measure. Both anglophones and francophones demonstrated improvement in oral and listening comprehension skills in the second language. On the attitude measures

different groups completed the pretest and post-test, thus eliminating effects due to be repeated testing. No differences were obtained between pretest and post-test on attitudes toward the other cultural groups for either anglophone or francophone participants. Somewhat different results were obtained on direct questions asked after the exchange in which students described their reactions toward members of the other community before they went on the exchange and afterwards. In this case, they either evidenced no change in evaluative reactions or a change in the positive direction. Hanna and Smith (1979) consider these data as indicating that the exchange had beneficial effects in improving understanding of the other community, and question the utility of more traditional attitude scales. It is equally possible, however, that the direct questions force people to make comparisons and contrasts on rather short notice that may not be either reliable or valid. Before discarding attitude assessment procedures, it seems prudent to investigate them using designs which are less open to criticism. Other studies, discussed below, have at least made use of a non-participating control group so that generalizations can be made which are not dependent simply on testing effects.

Cziko and Lambert (1976) used an interesting variation of what might be referred to as a bi-cultural excursion program in which samples of French and English students actually exchanged schools for a one-day period on eight different occasions in the second term of the school year. The English-speaking students completed the Gardner and Smythe (1975) attitude-motivation test battery both before and after the exchange, and in addition, answered a number of questions. A control group of English-speaking students also answered the questionnaire. Those who took part in the exchange were divided into two groups, low participation, vs. high participation, on the basis of the extent to which they indicated the exchange offered them the opportunity to use their

French. Only one variable, attitudes towards learning French, resulted in a significant interaction between time of testing and group; there was a significant decrease in attitudes toward learning French for the low-participation group, but no significant change for the high-participation and control groups. There was, however, considerable evidence on other measures of the possibility of effects due to time of testing. For the measures of attitudes toward French Canadians, ratings of instrumentality, ratings of integrativeness, and attitudes toward the European French, scores decreased significantly from the pre-test to the post-test indicating either a time or testing effect.

A very similar design was used by Clément, Gardner and Smythe (1977) who investigated the effects of a short four-day excursion to Quebec city on a large sample of grade 8 students. Students were tested before and after the excursion, and formed three groups, low-participation and high-participation on the basis of statements concerning the extent to which they used French while in Quebec city, and a control group of classmates who did not participate in the excursion. After the excursion, the three groups differed predictably on attitudes towards French Canadians and attitudes towards learning French even after initial attitudinal differences were partialled out. The high contact group also differed significantly from both the control and low contact group on measures of interest in foreign languages, ratings of instrumentality and integrativeness, reported parental encouragement to learn French, attitudes towards European French people, motivational intensity to learn French, evaluation of the French course, and perceived utility of the French course. In short, even this brief excursion resulted in predictable and desired attitudinal changes, particularly when the amount of interaction with the other community during the excursion was considered. Desrochers and Gardner (1978) conducted a very similar study but identified participation in two ways, one using a self-

report measure obtained on the post-test and the other relying on peer ratings made each evening during the excursion. A control group was also included. The overall results using the self-report index as the measure of participation were similar to those reported above, but analysis of the means indicated that the high contact group differed from both the low contact and control group in predictable ways only on the measures of degree of integrativeness, parental encouragement and behavioural intention to speak French in the future. That is, the results were comparable, but the number of significant effects were not as pronounced. When the peer-ratings were used to identify the contact groups, the high contact group differed from the low contact and control groups only on one measure, attitude towards French Canadians. The results of this study, therefore, indicated that positive attitudinal effects do take place, but that they are obviously influenced by a number of factors, judging from the somewhat inconsistent results obtained in the two studies, as well as the different definitions of participation as indexed by self-report and peer assessments.

BILINGUALISM

Bilingual individuals have often been the primary focus of empirical research because investigators were interested in comparing their performance on particular tasks to that of unilinguals. Researchers have also regarded bilingualism as a unique situation for testing hypotheses of more general theoretical interest. Regardless of the original purpose, a substantial amount of research has been done in Canada during the 70's on bilingual performance. In the following pages, this material will be discussed under the general headings, perceptual processes, the representation of experience, consequences of bilingualism, and bilingualism in interpersonal communication.

Perceptual processes

When we talk about speech perception or reading, we are dealing with three

levels of performance. The first level is perception of the physical features of the stimuli such as phones or characters, the second is the perception of syntax, and the third is the perception of meanings. Each level can be investigated independently.

We know that languages differ in terms of the sounds or phones speakers use and can differentiate. Although French and English speakers with normal hearing can clearly distinguish, for example, between /l/ and /r/, or /b/ and /p/, the articulatory characteristics of /b/ may be slightly different for each group of speakers. This is clearly demonstrated by the following study.

Caramazza, Yeni-Komshian, Zurif and Carbone (1973) used synthetic voiced-voiceless consonant contrasts varying in voice onset time (e.g., /b-p/) to examine the performance of French-English bilinguals and French and English unilinguals on a sound labelling task and a sound production task. Bilinguals were tested twice on both tasks, once in a French context and once in an English context. The results of the labelling task indicated that French unilinguals do not use exactly the same cues in discriminating voiced (/b/) from voiceless (/p/) consonants as English unilinguals do. Bilinguals' performance revealed a pattern intermediate between the two unilingual groups, regardless of the language context. On the sound production task, bilinguals produced voicing distinctions which clearly differed for the two languages. Their productions were more closely aligned with those of the French unilingual group when speaking French, and closer to the English unilingual group when speaking English. Clearly, bilinguals are better able to adapt their speech production mechanisms than their perceptual mechanisms to the demands of the second language. Davine, Tucker and Lambert (1972) investigated the perceptual performance of unilingual and bilingual pupils, using slightly larger sound units, namely, phoneme sequences such as /gl/ and /vr/. They found that French-English bilinguals and

French unilinguals were better able to discriminate sequences that can occur in both languages than were English unilinguals but they did more poorly with sequences that can occur only in English. Interestingly enough, bilinguals were better at discriminating sequences that could occur only in French than French unilinguals, which suggests that their perception was strongly biased in the direction of French, their second language. Godkewitsh (1972) also reported a similar bias, even though he used a different procedure. The cause of this apparent perceptual bias remains to be determined. One point is clear, however: linguistic experience does influence phone perception.

Very little research has been conducted in Canada or elsewhere on bilingual's perception of syntax or meaning. Some preliminary work by Schwartz, Singer and Macnamara (1973), however, suggests that beginning language students interpret the meaning of simple spoken words faster in their first language than in their second language, and experience more difficulty interpreting the syntax of isolated sentences spoken in their second language. Other studies have shown that, after only a few years in an immersion program, students' performance on comprehension tasks is as good as that of native speakers (e.g., Samuels, Reynolds & Lambert, 1969), but virtually no information is currently available on the development of comprehension. Many phenomena remain to be investigated in bilingual speech perception. To give an example, all students who begin the study of another language are overwhelmed by the speech rate of the target language's native speakers, while native speakers generally have no difficulty understanding each other. Presumably, language students must learn to attend to the important cues of language, and these include prosodic features such as rhythm, stress, and intonation as well as segmental features such as voiced-voiceless contrasts.

Perception of syntactic and semantic aspects of printed material is probably

easier to investigate since there is less variability in printed than in spoken stimuli. Nonetheless, reading involves very complex skills. Bowers (1970) notes that skilled readers are able to read with comprehension more than 1,000 words per minute, and it is clear that skilled readers do not proceed in a serial way, letter by letter or word by word (Kolers, 1970). Various aspects of language knowledge come into play in skilled reading, such as knowledge of syntactic, semantic and discourse constraints, but beginners likely lack this knowledge, and are more likely to read in a serial way. LeBlanc and Muise (1971) wondered if knowledge of the probability that two letters occur side by side (digram transitional probability) in a second language would affect an individual's ability to spell out these letters. They found that French readers, with only some basic knowledge of English, needed more time to read English second-order sequences than French second-order sequences. Although this finding might support the notion that knowledge of letter sequential dependencies in a language affect reading speed, Muise, LeBlanc, and Jeffrey (1972a,b) argued that the effect was in fact attributable to substantial differences in information redundancy between the two languages. Using larger linguistic units, however, Macnamara, Feltin, Hew, and Klein (1968) reported that anglophone readers had more difficulty using the transitional probabilities of language in the early stages of reading French materials, relative to their native language (see also Kellaghan & Macnamara, 1967; Genesee, Polick & Stanley, 1977).

Cziko (1978) pursued this line or research by comparing the reading performance of one group of native speakers of French with that of three groups of native speakers of English, with different levels of competence in French (i.e., beginner, intermediate, and advanced). They were asked to read six French texts as quickly as possible without paying attention to the meaning of the texts. These texts were either left intact, made semantically anomalous, or had the

words rearranged in random order. Thus syntactic and semantic constraints were violated to varying degrees in the three types of texts. All groups read the semantically anomalous texts faster than the random version, but only the advanced group and the French native group read the intact version faster than the semantically anomalous texts. Furthermore, the advanced students outperformed the native speaker group. Similarly, Tucker (1975) reported that advanced second-language students also show superior word discrimination skills than native speakers. It is not clear, however, whether this simply reflects different teaching methods or unusual experimental task demands on the native-speaker group. Of more theoretical interest is the fact that sensitivity to syntactic constraints appears to develop before sensitivity to semantic constraints.

In another experiment, Cziko (1978) examined the question of sensitivity of discourse constraints, using the Cloze procedure (Taylor, 1954) where every fifth word of a text (varying in degree of approximation to French) is replaced by a blank space. The respondents had to fill in the blanks. Native French speakers and advanced students outperformed the intermediate-level group. They also showed more sensitivity to the discourse constraints present in the normal prose condition, relative to the lower order conditions, than did the intermediate students. The fact that advanced students did as well as native speakers is especially interesting since d'Anglejan and Tucker (1973) reported that professional translators did not score as well as native speakers on a cloze test. This contrasting result could possibly be explained by the methodological differences between the two studies or in terms of training differences. This issue is important, however, since d'Anglejan and Tucker suggest that linguistic competence is not sufficient to ensure cross-cultural communication. The recipient must also share the same cognitive frame of reference as the communicator.

A phenomenon which is very interesting with regards to reading is that students enrolled in French immersion programs, who started to learn how to read in their second language, show substantial transfer of skills to reading native language materials (Genesee, 1979b). The degree of such transfer, however, seems to be partly determined by the extent of similarity between the two languages. Cowan and Sarmed (1976), for example, found much less transfer from English to Persian than has been found from French to English. The Persian language differs from English in some important respects, such as syntax, orthography, and directionality (reading from right to left). Less transfer was also reported from Hebrew to English than from French to English (Genesee, Tucker & Lambert, 1978a). Thus, one important question remains: What skills relevant to reading can be transferred from one language to another?

Of equal theoretical interest is the nature of the mechanisms responsible for encoding reading input. To investigate this question, Kolers (1966) had French-English bilinguals read, silently or aloud, unilingual and mixed-language passages. When asked to read silently, subjects read the mixed-language passages as rapidly as the unilingual ones, with no detrimental effect on comprehension compared to the average of the unilingual texts. When asked to read the passages aloud, however, subjects needed more time to read the mixed passages than to read the unilingual ones. This contrasting result appears to reflect the greater demands on phonological code-switching which must be under the control of the speaker. Kolers' conclusion that code-switching at the time of input requires no time was questioned by Macnamara and Kushnir (1971), however. They demonstrated, using a slightly different procedure, that silently reading mixed passages takes significantly longer than reading unilingual ones. Kolers (1966) and Macnamara and Kushnir (1971), however, agree that input processing is automatic, and that such processing entails no translation from one language to the other.

Another related question is whether bilinguals attending to information conveyed in one language can ignore entirely information in the other language. Since the input processing mechanisms appear to be primarily controlled by the stimuli, one would suspect that it will be very difficult for bilinguals to ignore the other-language information. In an early investigation of this question, Preston and Lambert (1969) modified the Stroop color-word task (Stroop, 1935). The original task involves several large cards on one of which are 100 small coloured patches arranged in rows with ten patches to a row. Each subject is timed while naming the colors as rapidly as possible. The same task is performed on a second card that contains 100 common nouns (e.g., apple, house, etc.) printed in different colors, and on a third card that includes 100 color words (e.g., red, blue, etc.) also printed in different colors. The effect of interest is observed when subjects are asked to name the colors on the third card. Typically, they need more time to name the colors of a sequence such as RED printed in blue, GREEN printed in orange, etc. Respondents experience difficulty keeping the printed color word from interfering with the process of naming the colors. They automatically encode the word.

In the bilingual version, the printed words on the second and third card were either in French or in English and the naming language was also either French or English. If the bilinguals' two languages can be kept completely separate one would expect no interference when they are asked to name in French the color of the word RED printed in blue. What Preston and Lambert (1969) found, however, is that interference does occur even when the language of the irrelevant printed word differs from the naming language. This finding received further support from studies involving variations of the bilingual Stroop task or analogous tasks (Hamers & Bertrand, 1973; Hamers & Lambert, 1972, 1974). It is now clear that the simple language-switching models proposed

earlier (e.g., Penfield & Roberts, 1959) cannot account for the complexity of bilingual performance on decoding-encoding tasks. The results reported in these interference studies show again that input processing is controlled primarily by the nature of the stimulus structure.

The representation of experience

It is customary in cognitive psychology to regard human beings as sophisticated information processors. The analogy may be more or less accurate but only a few scientists will deny the fact that humans categorize or process the information they extract from their environment. This information may concern the physical properties of objects such as texture, weight, or size; a very substantial proportion of our knowledge, however, is acquired indirectly, via the medium of language. A key question in the area of bilingualism, and cognitive psychology in general, is how language is related to conceptual knowledge.

Weinreich (1953) has defined three types of bilingual individuals (coordinate, compound, and subordinate) who are said to differ in some important respects as to how their languages are mapped onto their conceptual knowledge. The coordinate bilingual is defined as one who can function like a unilingual in each of his languages. The two semantic networks acquired through each language are relatively clearly differentiated. The compound bilingual has achieved good mastery of two linguistic codes but these are connected to a fused single semantic system. Thus, he/she would not function like a native in any of his/her two languages. The subordinate bilingual would use his/her dominant language like a native but not his/her weaker language, since the use of the latter is mediated by a semantic system acquired through the dominant language only. Different language learning circumstances are said to foster one or another of the three types of bilingualism. For example,

learning two languages in different geographical or social contexts, or even at different periods of one's life, is more likely to bring about coordinate bilingualism. The compound type would be promoted if the two languages were used interchangeably in the same context. Subordinate bilingualism would result from learning a second language by the translation method, whereby new labels are associated to units of meaning in the first language. Although Weinreich proposed this tri-partite classification, Ervin and Osgood (1954) collapsed the categories compound and subordinate into one type called "compound", and this fusion has been maintained ever since psychologists started classifying bilinguals (Kolers, 1963; Lambert, Havelka & Crosby, 1958; Diller, 1974; Shaffer, 1976). Paradis (1978), however, argues that subordinates differ from compounds in important respects, such as the directionality of inter-lingual interference they may experience.

In his review of a decade of research on the "compound"-coordinate distinction, Lambert's (1969) attitude toward the viability of the constructs reflects everything but enthusiasm: "Our own confidence in the compound-coordinate matter is still only luke-warm; but, regardless of its fate, the important point is that in our attempts to validate this construct we are finding out a good deal more about bilingualism and bilinguals (p. 126)." Other investigations carried out in the 70's have not revealed any important psychological correlates of the "compound"-coordinate distinction (e.g., Dillon, McCormack, Petrusic, Cook & Lafleur, 1973).

The initial question of the relationship between language and cognitive representation has remained with us throughout the 70's, but under the name of the <u>independence-interdependence</u>, or <u>one store-two store</u> issue (for reviews, see McCormack, 1974, 1976, 1977). This dichotomy is reminiscent of the distinction between "compound" and coordinate bilingualism. The extreme interdependence, or one-store, position holds that knowledge is represented in a single abstracted

format. Thus the content of memory is not divided in terms of the language of input (see Rosenberg, 1977; Taylor, 1974). The absence of language-dependent effects in memory research has typically been interpreted as supporting some form of common code or amodal representation. Such findings were obtained in a variety of experimental situations, such as paired-associate learning (Kintsch & Kintsch, 1969), tasks using a savings method (McLeod, 1976), free recall (Lopez & Young, 1974), and similarity judgments (Barnett, 1977; Colletta, 1975).

The extreme independence, or two-store, view suggests that bilingual memory consists of two functionally separate storage and retrieval systems, one for each language. Moreover, information can be transferred from one system to the other only through translation processes. Nobody seems to agree entirely with the extreme position. Kolers (1978), however, argues that information must be encoded in a means-dependent way. That is, our knowledge of the world depends in part on the way we acquired it. Thus if knowledge is conveyed via a particular language, its representation in memory must contain some information about the language of transmission. Empirical evidence of language-dependent effects in memory research have likewise been taken as supporting the independence position. As for the other position, language-specific effects have been found with many different experimental procedures such as word associations (Kolers, 1963; Taylor, 1971), language switching (Macnamara & Kushnir, 1971), and mixed list recall (Dillon et. al., 1973; Kolers, 1966b; Kolers & Gonzalez, in press; Tulving & Colotla, 1970).

The representation of language functions has also received some attention in neuropsychology. Two approaches to the study of bilingualism and brain processes can be distinguished. The more traditional approach is based on

clinical studies of polyglot aphasia and consists of examining the relationships between patients' language deficits, neurological diagnostic, and other personal data which might be related to the pattern of symptoms. Paradis (1977) presents an extensive review of this body of literature. It is very difficult to draw strong conclusions from these studies because of the lack of comparability of the reported information. In order to remedy this situation, Paradis and Lecours (1979) have suggested a set of standard variables which should be part of a complete language assessment battery.

The second approach is based on modern experimental methodology (c.f., Vaid & Genesee, 1980) and is exemplified here by some Canadian studies concerned with the relationship between the age of second-language acquisition and the underlying organization of neural functions. It was hypothesized that the earlier the acquisition of another language, the more closely the pattern of hemispheric processing of language in balanced bilinguals will resemble that of monolinguals of the same age. Genesee, Hamers, Lambert, Momonen, Seitz and Stark (1978) investigated the pattern of evoked responses recorded from the left and right hemispheres of subgroups of French-English balanced bilingual adults during a language recognition task. They found that response latencies were shorter in the left hemisphere of individuals who had acquired their second language in infancy or in early childhood, while the latencies were shorter in the right hemisphere of participants who had acquired this second language after the age of 12. These findings were replicated by Vaid and Lambert (1979) with an auditory interference procedure. But no hemispheric difference was obtained in dichotic listening studies (Bellisle, 1975; Stark, Genesee, Lambert & Seitz, 1977). The performance of bilinguals in these later experiments, however, was examined in one language only. Therefore, the results do not warrant firm conclusions. The empirical evidence available to this point

suggests that the pattern of hemispheric involvement in language processing of early bilinguals resembles that of monolinguals, and that differential hemispheric activity is more characteristic of late bilinguals.

Consequences of Bilingualism

In addition to increasing the number of lexical entries and grammatical rules in an individual's memory, what other consequences does bilingualism have? The answer to this question is by no means simple. Early research, conducted outside of Canada, was interpreted as suggesting that bilingualism was associated with lower verbal intelligence, poorer scholastic achievement and emotional problems (for reviews, see Darcy, 1953, 1963; Diebold, 1968). Although many of the early studies were poorly designed, not all negative effects could be attributed to methodological problems. A study conducted in Canada, however, set a precedent in demonstrating that, when respondents are equated in terms of age, socioeconomic background and test language fluency, unilinguals not only fail to outperform bilinguals on various intellectual tasks, but they actually score lower on these tasks (Peal & Lambert, 1962). In this study, bilinguals were found to perform better than unilinguals on both verbal and non-verbal intelligence tests, and the pattern of results also suggested that they might have a more diversified structure of intelligence. Positive consequences of bilingualism have been reported in many countries throughout the 70's (for reviews, see Cummins, 1978a; Lambert, 1977; McLaughlin, 1978, Chap. 7; Segalowitz, 1977, in press; Swain, 1974, 1978), demonstrating a definite change since the earliest studies.

Recent studies have found quite a variety of cognitive and social benefits of bilingualism. For example, relative to unilingual children, bilingual children obtained better scores on tasks of cognitive flexibility (Albert & Obler, 1978; Balkan, 1970), divergent thinking abilities (Cummins & Gulutsan, 1974a, 1974b) and general intellectual development (Bain, 1975;

Liedke & Nelson, 1968). Other empirical findings suggest that bilinguals are also better able to analyze linguistic meaning, to separate word meaning from word sound, and are more sensitive to aspects of interpersonal communication (Bain, 1974; Bain & Yu, 1978; Ben-Zeev, 1977a, 1977b; Cummins, 1978b; Cummins & Mulcahy, 1978; Genesee, Tucker & Lambert, 1975, 1978b; Feldman & Shen, 1971; Ianco-Worrall, 1972).

Although many positive effects of bilingualism have now been demonstrated, it is meaningful to ask how general they are. In this respect, Lambert (1974) has introduced the important concepts of <u>additive</u> and <u>subtractive</u> bilingualism. Additive bilingualism refers to the situation where an individual learns a second language while maintaining a high level of proficiency and skill in his/her first language. This is typically the case of Anglophone children in French immersion programs. Their knowledge of French is acquired at no presumably long-term cost to proficiency in English, and it is important to note that it is generally in the context of additive bilingualism that cognitive benefits have been reported. Subtractive bilingualism, by contrast, refers to the situation in which students learn a second language at the expense of proficiency in their mother tongue. Thus the second language gradually replaces the first one as a means of communication. Manifestations of this type of bilingualism, such as gradual linguistic assimilation and mother tongue disfluency, have been observed among Franco-Ontarian children (see Canale & Mougeon, 1978; Churchill, 1976; Churchill et al., 1978; Hébrard & Mougeon, 1975; Mougeon, 1977; Mougeon & Canale, 1978; Mougeon & Hébrard, 1975). It is reasonable to believe that many children tested in the early studies on the relationship between bilingualism and intelligence were victims of subtractive bilingualism, while the latter research has focused on children who might be characterized as being in the context of additive bilingualism.

Similar observations led Cummins (1979b) to put forward the threshold hypothesis, which assumes that "those aspects of bilingualism which might positively influence cognitive growth are unlikely to come into effect until the child has attained a certain minimum or threshold level of competence in a second language. Similarly, if a bilingual child attains only a very low level of competence in the second (or first) language, interaction with the environment with that language, both in terms of input and output, is likely to be impoverished (p. 42)." In fact, two threshold levels of linguistic competence are posited: one under which only cognitive deficits can result from second-language education, and another above which cognitive benefits are most likely to occur. Between these two levels, no positive or negative effects are expected (see also Cummins, 1976, 1978b; 1979d). Cummins points out that additive bilingualism is not unrealistic with minority group children, but they should acquire a high level of literacy in their first language before they enter a bilingual program. Moreover, first language education should be part of the curriculum throughout the program. He concludes that "if optimal development of a minority language child's cognitive and academic potential is a goal, then the school program must aim to promote an additive form of bilingualism involving literacy in both L_1 and L_2 (1979c, p. 247)." Mougeon and Canale (1979; Mougeon, Canale & Bélanger, 1979), in discussing the problems Franco-Ontarians are facing, suggest that literacy attainment in their mother tongue of itself is not sufficient. Other factors are operating in fostering subtractive bilingualism, such as lack of institutional support for French and difficulties related to French language schooling in Ontario.

Bilingualism in interpersonal communication

Communication is a complex concept. This term has frequently been interpreted in the context of referential information transmission, however, apart

from conveying accurate information, communicators often have other aims or goals in mind (Higgins, 1980). They may want to initiate, maintain, or disrupt a social bond (e.g., friendship) or achieve a common definition of social reality. Or they may try to give a good impression of themselves or signal their allegiance to a particular social group. Communicational effectiveness (as defined by the communicator's intended message) is not only dependent on linguistic competence, it is also determined by the communicators' social skills and shared cognitive frame of reference (Triandis, 1977).

In evaluating the outcomes of second-language instruction, some attention has been paid to referential communication skills. Communicational accuracy has been investigated in various tasks designed to tap decoding and encoding skills. In one study (Samuels, Reynolds & Lambert, 1969), young listeners attempted to understand a message spoken in their second language. The spoken message provided information on how the listeners should arrange a set of blocks on a stacking peg. An encoding variant of this task required the child to describe a drawing in his second language so another child listening could choose from among six alternatives. Samuels, Reynolds, and Lambert (1969) found that Anglophone grade 2 pupils who had been instructed exclusively in French since kindergarten performed as well on the decoding and encoding tasks as unilingual French and English controls, for French and English descriptions. Using a similar procedure (i.e., selecting a photograph) Taylor and Gardner (1970) also found that Francophone high school students were as good at decoding the message spoken in English as Anglophone controls.

The usual referential communication procedure has been extended in interesting ways by Taylor and Simard (1972) and Simard and Taylor (1973). The two studies involved pairs of nonfluent bilinguals, one Francophone and one Anglophone, in face-to-face interaction. No instruction was given about the

language of communication. It was found that both languages were used equally often by the participants, with no detrimental effect on the task. The authors do not discuss the reasons why the nonfluent participants actually switched from one language to the other. Language switch, however, is known to be one of several communication strategies nonfluent speakers of a second language can use when the necessary vocabulary and grammatical rules have not yet been learned (see Hamayan & Tucker, 1979; Selinker, Swain & Dumas, 1975; Tarone, 1977; Tarone, Cohen & Dumas, 1976). Three types of communication strategies have now been identified: topic avoidance, paraphrasing, and language switch. Other factors affecting the likelihood of language switch will be discussed below.

Another aspect of communication skills development which has been studied is the communicators' sensitivity to their listeners' needs (e.g., whether they have a language, auditory, or visual handicap). Such sensitivity is usually lacking in preschool and primary schol children but it increases as cognitive abilities develop (Aboud, 1976). Genesee, Tucker and Lambert (1975) wondered if children placed in partial or total language immersion programs would acquire greater sensitivity to the needs of others, especially those with a communication handicap, than would children in native language school programs. Kindergarten, grade 1 and grade 2 children from each of these three schooling programs were asked to explain a game in their native language to two listeners, one blindfolded and one not blindfolded. Partial and total immersion students were found to provide more information about the physical pieces or aspects of the game to the blindfolded listener than the regular program students. No difference was found between the three groups in the amount of information about the materials given to the listener who was not blindfolded. Genesee et al., concluded that second-language education may in

fact increase students' awareness of possible communicational difficulties and provide them with some experience in coping with such difficulties.

Every linguistic community has its particular sociolinguistic rules for expressing respect, friendliness, anger, and so on (see for example, Hymes, 1971; Taylor & Simard, 1975). In order to be effective communicators, second-language learners must acquire not only the vocabulary and grammatical rules of the target language but also some basic language-dependent social skills. Segalowitz (1976) paid special attention to nonfluent bilinguals' ability to adapt their speech style to formal and casual social situations. In this laboratory study, Montreal Anglophones communicated with another person either in French or in English, and either in a formal or in a casual speech style. The author hypothesized that the participants would feel most uncomfortable when communicating in casual French since they were more skilled in the formal classroom style than in the casual one which is usually acquired via direct contact with the second-language community. Research has demonstrated that direct contact has traditionally been very limited, despite the fact that Anglophone and Francophone Montrealers share the same geographical space (Hughes, 1970; Lieberson, 1970a, 1970b; Simard & Taylor, 1973). As expected, participants reported feeling most ill at ease when using casual French. They attributed more negative personality characteristics to their interlocutor in the casual French condition than they did in the formal French condition. No such difference was found in the formal and casual English conditions. Moreover, the participants believed they appeared less friendly when using their second language than when using their native language. They also reported that they appeared less intelligent and less self-confident when using casual French than when speaking formal French, but they reported the reverse when speaking English. They indicated that it was easier to express themselves and to be

understood in casual than in formal English, while the reverse was true in French.

Two aspects of these results are of particular importance. The first one is that reasonable linguistic competence in a second language does not necessarily ensure that the communicator will have the ability to choose the appropriate speech style. Such inflexibility may at times interfere with effective communication, especially when one intends to express friendliness and reduce social distance. The second, and more devastating, aspect of Segalowitz's findings is that communicational incompetence may result in attribution of negative characteristics to the interlocutor. Such perceived incompetence has been more frequently reported by Anglophones than by Francophones (e.g., Beattie, 1975; Lamy, 1976; Taylor, Simard & Papineau, 1978). Obviously, the potential consequences of one's perceived incompetence are unlikely to promote interpersonal communication across ethno-linguistic boundaries.

It is an oversimplification to treat face-to-face communication as a simple one-way process. Communication implies a sender as well as a receiver. Both individuals' personal attributes are important in determining communicational effectiveness. The receiver may have particular expectations about the communicator that will affect the interpretation of his message. Most bilinguals speak with a foreign accent which may provide the listener with a useful cue for determining the communicator's ethno-linguistic group membership. This information alone is sufficient to evoke a whole constellation of evaluative judgments, beliefs, expectancies, and subjective probabilities in the listener's mind. Aboud and Taylor (1971) found that ethnic stereotypes are more salient in the perception of an "outgroup" member than role stereotypes are, while the reverse is true for "ingroup" perception (see also Mann & Taylor, 1974). Direct contact with outgroup members, however, appears to

increase the use of role stereotypes for outgroup perception.

There are many potential consequences of ethnic stereotyping in person perception. Taylor and Gardner (1969) have shown that ethnic stereotypes influence person perception even when the stereotyped group member actively presents himself in a way that is incompatible with the stereotypes (see also Taylor & Gardner, 1970). Gardner (1973) suggested that the powerful effect of ethnic stereotypes on social perception is primarily attributable to the consensual nature of stereotypes, that is, that they are widely shared in the community. These ethnic stereotypes, however, are not accepted by every member of the community to an equal degree. Some individuals are more likely than others to perceive and evaluate a person who speaks with an accent in terms of ethnic stereotypes and, thereby, interpret what he/she says in the context of these stereotypes.

Second-language learners may eventually come to have a good control of their languages, accents, speech rates, and pause and utterance length. These skills allow them more flexibility in accomodating their speech styles according to the social setting, the conversational topic, and their partner. This accommodation process is very important in interpersonal communication. People often adjust their speech style to express values, attitudes, or intentions towards others. They may shift their speech style toward or away from that of their interlocutor as a way of communicating social approval or disapproval or to assert their group identity (see Bourhis, 1979a; Bourhis & Giles, 1977). The term convergence refers to a shift in speech toward that of another person, and divergence is a shift in the opposite direction, that is away from the interlocutor. Speech accommodation has a powerful impact on the perception of the speaker. For example, if a bilingual individual switches to the language of the interlocutor, he/she may be perceived differently than

when he/she does not switch or when he/she switches from the listener's language to another. In general, when a person shifts his/her speech style (or language) toward that of another, he/she is likely to be seen as more considerate and willing to break through cultural barriers than when he/she does not. And the listener is more likely to accommodate in return (Giles, Taylor & Bourhis, 1973). The social evaluation resulting from convergence may not be as favourable, however, if the accommodating behaviour is attributed to external pressures rather than voluntary effort. Similarly, listeners may react less negatively to non-convergence if the communicator is perceived to lack the necessary language skills (Simard, Taylor & Giles, 1976).

Socio-cultural and situational norms regarding language use may also determine the direction of the accommodation process that takes place in a particular context and how such accommodation will be perceived. Traditionally, English has been considered as the dominant and more prestigious language in Canada. The higher status of the English language has led to asymmetrical language convergence between Anglophones and Francophones or speakers of other languages. English-speaking Canadians have usually maintained English while interacting with bilingual or polyglot interlocutors, and the latter have had to switch to English. Such asymmetrical accommodation has been especially noticeable at the higher levels of the power hierarchy in industry, business, financial institutions, professional corporations, and government (c.f. Beattie, 1975; Gendron, 1972; Hughes, 1970; Joy, 1972; Lieberson, 1970; Royal Commission on Bilingualism and Biculturalism, 1967, 1969). This Canadian fact is also reflected in social psychological research. Sandilands and Corston Fleury (1979), for example, have found that Ottawa Anglophones were more likely to attribute hostile and egocentric motives to non-converging bilinguals, while Ottawa Francophones tended to focus on the physical location or proximity

between the participants in the simulated interaction.

For researchers interested in the topic of language use by bilinguals, Montreal is no doubt one of the most exciting natural laboratories. One important goal of language legislation in the province of Quebec has been to promote the use of French at all levels of society (see d'Anglejan, 1979; Juteau Lee, 1979). The provincial government is attempting to set new socio-cultural norms concerning language use by means of legislation. Whether one can legislate on language has been a difficult question for language planning experts, however, recent investigations conducted in Montreal by Bourhis (1979b); Domingue (1978) and Taylor, Simard and Papineau (1979) strongly suggest that patterns of language use among Anglophones and Francophones are changing. Montrealers are gradually adjusting their language behaviour to the new rules. There is now more pressure, in Quebec, for Anglophones to use their French skills, and for Francophones to maintain their speech code when interacting with Anglophone bilinguals. Francophones may even be encouraged not to become <u>too fluent</u> in English. Segalowitz and Gatbonton (1977) reported that Francophone Montrealers who can speak with a native-like accent are more likely to be perceived by other francophones as having a weaker sense of identity with their home group. Interestingly enough, the raters' perception does not seem to be related to their own feelings of nationalism or their own abilities in English. The variables involved in the dynamics of bilingual communication are numerous and their interaction may be quite complex.

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